

A NEW BLACKFLY SPECIES OF THE GENUS *SIMULIUM* (*EUSIMULIUM*) FROM LIAONING PROVINCE, CHINA (DIPTERA, SIMULIIDAE)

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Abstract The male, pupa and larva of *Simulium* (*Eusimulium*) *tenuistylum* sp. nov. from Beipiao, Liaoning, China are described. The new species is characterized by birdhead shape of the male style and the pupal lower filament of upper pair thickest. The specific name is given by the shape of male style. The type specimens are deposited in the Department of Biology, Guiyang Medical University, China.

Key words Diptera, Simuliidae, *Simulium* (*Eusimulium*), new species, Liaoning Province.

Eusimulium is a small subgenus of *Simulium*. Females of this subgenus are anautogenous and most of the feeding records are involved in birds (Adler *et al.*, 2004). Major diagnosis characters of *Eusimulium* include: radius with hair dorsobasally; male ventral plate elongate-triangular with very large widely divergent arms; paramere with a large parameral hook (Crosskey & Howard, 1997). This subgenus includes 34 species in the world and 10 of them are from China (Crosskey & Howard, 1997; Chen, 2007). Most species of subgenus *Eusimulium* occur in the Palaearctic Region (Crosskey & Howard, 1997; Chen & An, 2003). In this paper, the authors report one new species, *Simulium* (*Eusimulium*) *tenuistylum* sp. nov.

Simulium (*Eusimulium*) *tenuistylum* sp. nov. (Figs. 1–12)

Female. Unknown.

Male. Body length about 3.2 mm. Wing length about 2.3 mm.

Head. As wide as thorax. Upper eye consisting of 18 horizontal rows and 18 vertical columns of large facets. Clypeus black, grey-dusted and sparse with whitish yellow hairs. Antenna entirely brown; 1st flagellomere somewhat elongated, about 1.7 times as long as following one. Maxillary palp with 5 segments, proportional length of 3rd to 5th segments of 4.1: 3.7: 8.2; sensory vesicle very small.

Thorax. Scutum velvet black and densely covered with whitish yellow pubescence, and intermixed with some erect long black hairs on prescutellar area. Scutellum black, with whitish yellow hairs. Postscutellum black and bare. Pleural membrane and katepisternum bare. Legs. All coxae brown except fore coxa yellow. All trochanters brown. All femora yellow except apical 1/4–1/3 brown. All tibiae yellow on most of median portions of shafts, brownish on basal 1/3 and distal 1/3.

All tarsi black except hind basitarsus pale brown. Fore basitarsus cylindrical, about 7.0 times as long as its greatest width. Hind basitarsus nearly parallel-sided, about 5.0 times as long as wide and much narrower than the greatest width of hind tibia. Wing. Costa with spinules as well as hairs. Subcosta with hairs on basal 1/3. Basal section of radius full haired. Hair tuft at stem vein brownish yellow.

Abdomen. Basal scale brownish with a fringe of brownish yellow hairs. Terga brown black with pale and dark hairs except 2nd tergum pale brown. Genitalia. Coxite very large, conical in shape, about 1.5 times as long as wide. Style very characteristic, bird head-shaped in lateral view, abruptly narrowed on apical 2/3 and with apical spine. Ventral plate not lamellate, Y-shaped; plate body subtriangular and hairy. Basal arms very long, widely divergent and with dilation at ends. Parameres each with strong parameral hook. Median sclerite slender, rod-shaped and with bifid tip.

Pupa. Body length about 3.8 mm.

Head and thorax. Integument pale yellow and with sparse disc-like tubercles. Head with 1 facial and 3 frontal pairs of simple, long trichomes, whereas the thorax with 6 pairs of simple, small trichomes. Gill with 4 filaments, longer than pupal body, arranged in pairs, lower 2 filaments sessile or with very short stalk, slender and equal to each other in diameter but thinner than uppermost filament; upper 2 filaments are short stalked; uppermost filament arising upwards and then bending forward and form of a distinct angle; lower filament of upper pair thickest and about twice that of the lower 2 filaments.

Abdomen. Tergum 2 with 5 simple short setae and 1 simple long seta on either side. Terga 3 and 4 each with 4 hooked spines on each side. Terga 5–8 each with spine combs on each side. Tergum 9 with a pair of stout cone-like terminal hooks. Sternum 5 with a pair of bifid hooks

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situated closely together on each side. Stema 6 and 7 each with a pair of bifid inner and simple outer hooks widely spaced on each side.

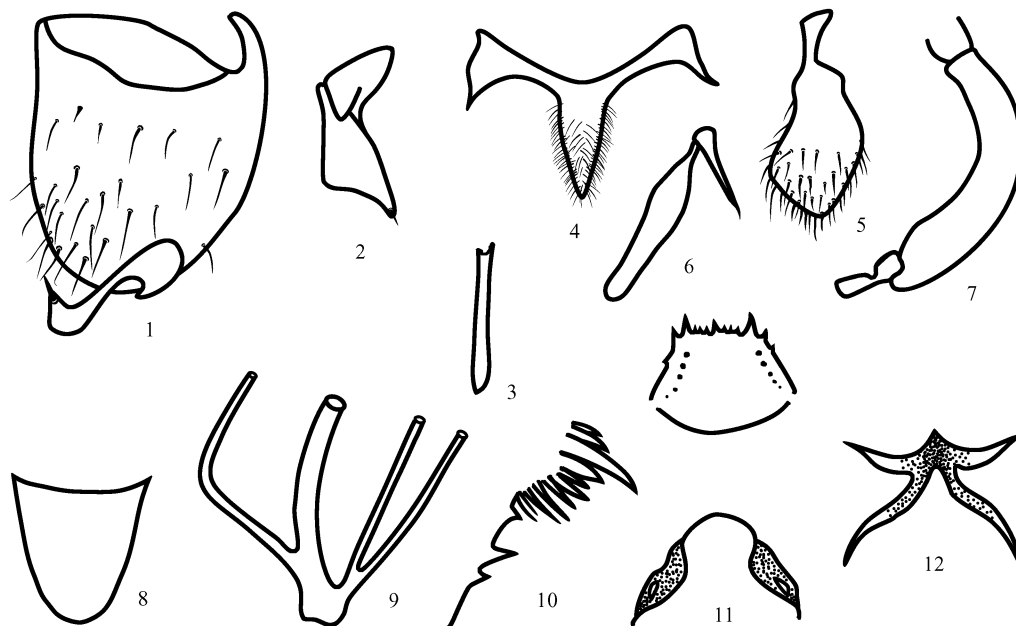
Cocoon. Wall-pocket-shaped, tightly woven, with a thick anterior margin but no antero-dorsal projection or lateral window.

Mature larva. Body length 3.3-5.6 mm. Body color greyish yellow. Cephalic apotome with faint positive head spots. Antenna longer than stem of cephalic fan, composed of 4 segments in proportion of 6:6:7:8:5:1:0.3. Each cephalic fan with 36-38 main rays. Mandible with a pair of developed madibular serrations but lacking supernumerary serrations. Hypostomial teeth 9 in number and with median and corner tooth being prominent; hypostomial bristles 4-6 in number on each

side. Postgenal cleft rounded and a little shorter than postgenal bridge. Thoracic integument bare. Abdominal integument sparsely with some minute setae dorsally. Rectal gill of 3 lobes, all simple. Anal sclerite of X-form type with anterior arms shorter than posterior ones. Posterior circlet with about 70 rows of approximately 15-18 hooks. Ventral papillae well developed.

Holotype ♂, reared from pupa, slide mounted, collected in a small, shaded stream from Daheishan, Beipiao City, Liaoning Province, China (41°49'N, 120°45'E; alt. 175 m), 20 Aug. 2007. Paratypes 4 pupae and 2 larvae, were taken from trailing grasses and decaying leaves exposed to the sun by YANG Ming and FAN Wei on the same day as holotype.

Distribution. Liaoning Province, China.



Figs 1-12. *Simulium* (*Eusimulium*) *tenuistylum* sp. nov. 1. Coxite and style. 2. Style in lateral view. 3. Median sclerite. 4. Ventral plate. 5. Ventral plate in lateral view. 6. Paramere. 7. Hind basitarsus and 2nd tarsomere. 8. Cocoon. 9. Pupal filaments. 10. Larval mandible. 11. Larval head capsule. 12. Anal sclerite.

Remarks. According to the shape of male ventral plate, this new species seems to fall into the subgenus *Eusimulium* of *Simulium*. The present new species is characterized by the male style birdhead-shaped and the pupal lower filament of upper pair thickest. It is apparently related to *S.* (*E.*) *taishanense* Xue & An, 2001 from Shandong, China and *S.* (*E.*) *satsumense* Takaoka, 1976 from Japan. The new species, however, can be readily separated from the related species mentioned above by several combination characters, such as the shape of style, ventral plate and median sclerite and the coloration of the legs in the male, the filaments branching in the pupa and the some characters of larva.

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辽宁真蚋亚属一新种（双翅目，蚋科）

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摘 要 记述在中国辽宁省北票市发现的新种细端真蚋 *Simulium* (*Eusimulium*) *tenuistylum* sp. nov., 对其雄虫、蛹和幼虫进行了描述。新种的突出特征是雄虫生殖肢端节侧面观呈

鸟头状，蛹呼吸丝上对下丝非常粗壮。模式标本存放于贵阳医学院生物学教研室。

关键词 双翅目，蚋科，蚋属真蚋亚属，新种，辽宁省.

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